CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA
95833-2937
Tel 916.920.0300
Fax 916.920.8463

CH2MHILL

May 3, 2001

01-AFC-4

CALIF ENERGY COMMISSION

MAY 03 2001

RECEIVED IN DOCKETS

Ms. Cheri Davis
California Energy Commission
Energy Facilities Siting and Environmental Protection Division
1516 Ninth Street, MS-15
Sacramento, CA 95814

Subject: East Altamont Energy Center Application for Certification
Data Adequacy Response Set 2 (01-AFC-4)

Dear Ms. Davis:

Enclosed are 35 copies of the East Altamont Energy Center Application for Certification Data Adequacy Response Set 2.

If you have any questions, please call me at 916-920-0300.

Sincerely,

CH2M HILL

Jerry Salamy
Project Manager

c: Alicia Torre/Calpine
Tom Lagerquist/Calpine
Jim McLucas/Calpine
EJ Koford/CH2M HILL

*Final*

# EAST ALTAMONT ENERGY CENTER DATA ADEQUACY RESPONSE SET 2

Prepared for

**East Altamont Energy Center, LLC**

May 2001

CH2MHILL

2485 Natomas Park Drive
Sacramento, CA 95833

# Table of Contents

# Section 1.0 Introduction

East Altamont Energy Center, Limited Liability Company (EAEC LLC) submitted an Application for Certification (AFC) to the California Energy Commission (CEC) for the 1,100 megawatt (MW) East Altamont Energy Center (EAEC) combined cycle electrical generating facility on March 29, 2001. On April 26, 2001, the CEC staff issued a letter determining the EAEC AFC data inadequate. EAEC LLC submitted responses to the CEC covering all topic areas except water resources on May 1, 2001. This submittal provides the water resources responses identified by the CEC as necessary for the EAEC AFC to be deemed data adequate.

The responses presented in this document are in response to the items identified in the Water Resources Data Adequacy Worksheets (attached to the Commission's April 26, 2001 letter) where the Commission staff indicated adequate data was not provided.

# Section 2.0 Data Adequacy Responses

As stated above, EAEC LLC is providing the additional Water Resources data required for a data adequacy determination by the Commission based on the Data Adequacy Worksheets provided with the Commission's April 26, 2001 letter.

The EAEC AFC identified two possible sources of potable / domestic water to support the operation of the EAEC. These included the use of an onsite groundwater well or the use of surface water. At this time, EAEC LLC is simplifying its application by eliminating the option to use groundwater from an onsite well as the source of potable / domestic water. Therefore, the only source of potable / domestic water for the operation of the EAEC is surface water from the Byron Bethany Irrigation District (BBID).

As shown in Tables 7-1A and 7-1B (page 7-2) of the AFC, the project's use of BBID water was estimated at 4,616 acre-feet per year with no recycled water use and 1,753 acre-feet per year with recycled water use. The change in the project description presented in Supplement A will add 2 acre-feet per year to these BBID requirements, an addition of 0.04 % with no recycled water use and 0.11 % with recycled water use. Since the potable / domestic water and the cooling water supply are from the same source, there are no additional off-site linears associated with this change. Use of the BBID water for potable / domestic water will necessitate the installation of a water treatment system to treat the water to drinking water standards. The package treatment plant unit that will be used is a US Filter Water Boy © pre-engineered package plant with microfiltration and UV disinfection, or equivalent.

## Section 2.1 Water Resources

**Data Adequacy Deficiency – W-1.** The project will be required to comply with Title 27 of the California Code of Regulations. Please provide the background water quality data for upgradient wells of the proposed project, installation of required monitoring wells and monitoring protocol as specified by the CVRWQCB. Please also submit all information required by the CVRWQCB in a report of waste discharge requesting WDR's for the proposed project.

**Data Adequacy Response –W-1.** The ROWD requires the applicant submit a Form 200 (which describes the ownership and legal entities), and supplement this with environmental information specified in Title 27, Article 4. Many of the requirements for Article 4 are described in the AFC.

Water Impairment: Page 8.14-4 of the describes shallow groundwater as poor and generally not used for potable supply. Farmers in this area generally tile their fields to drain saline water.

Topography: The topography of the site and flood plains are shown and described in Section 2 and Section 8.14.

Climatology: Climate of the site is described in section 8.14, with rainfall described in Tabel 8.14-5. An isohyetal map is attached to this response. Stormwater runoff calculations were made based on storms of 10, 25, 50 and 100 year return periods, as shown in Table 8.14-6.

Evaporation Rates for the project are as follow:

**Evaporation Rate at Tracy Pumping Plant (in inches)**

| Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.35 | 2.54 | 5.22 | 8.12 | 11.93 | 14.69 | 17.18 | 14.58 | 10.28 | 6.57 | 2.89 | 1.34 |

The calculated stormwater runoff volume is shown in Table 8.14-6 and Table 8.14-7.

The runoff pattern is shown in Figure 8.14-4. Since the project proposes there to be evaporation ponds, there would be no off-site runoff from the ponds.

Wind Rose: The wind roses for the project and a quantitative description of wind direction and frequency are provided in detail in Section 8.1, along with Figure 8.1-7a through 8.1-7g.

Geology: The geology of the site vicinity is described in detail in Section 8.15.

Geologic Structure: There is no information from the site specificallly with respect to attitude of bedding, thickness of beds, or location of fractures, folds or displacements. EAEC LLC has requested a detailed geotechnical study of the project site that should provide this information within approximately 60 days.

Engineering and Chemical Properties: Brine in the ponds is characterized in Table 8.14-3, with respect to concentrations of metals, salts, and potential toxics.

Stability Analysis: There is no formal stability analysis at this time, because the geotechnical site investigation has not been completed. However, the nearest active (Holocene) faults are within 30 miles and the maximum credible earthquakes are listed in Table 8.15-1. This level of activity and the general soil types in the region will not be problematic in developing a suitable foundation and berm structure to reliably support the evaporation ponds. EAEC LLC anticipates preparing preliminary and final engineering based on site –specific surveys and geotechnical evaluations, but the preliminary evaluations indicate no restrictions on the ability to design a suitable containment in this area.

Fault Identification: Figure 8.15-2 shows the principle faults in the region. There are no known active (Holocene) faults within 200 feet of the facility.

Hydraulic Conductivity: There is no site-specific data on hydraulic conductivity, however as noted on page 8.14-4 of the AFC:

"Available ground-water information near the project site indicates that shallow groundwater occurs at depths of 0 to 10 feet below grade. Groundwater movement is very slow, due to lack of irrigation pumping, permeability, and high water table in the Delta (Hill and Associates, 1964). Vertical groundwater movement is impeded by a relatively thin

water-bearing section of less than 200 feet above the poorly permeable and strongly confined deeper aquifers."

Flow Direction: As shown in Figure 8.14-3 in the AFC, groundwater flows northeast.

Capillary Rise: There are no data with respect to capillary rise at the site. This information should be available in approximately 60 days when the geotechnical investigation is completed.

Springs: There are no known springs at the site.

Water Quality: The nearest well with available water quality information is approximately 1 miles northeast of the site. The data from this well are shown in Table 8.14-1.

Surface Water: Surface waters in the vicinity, including uses and flows are shown in Figure 8.14-1 of the AFC and described extensively in Section 8.14

Groundwater: Available groundwater data are described beginning on page 8.14-3 of the AFC and in response W-3 below.

Background water quality data. Title 27 requires that for a Class II surface impoundment that one year of background water quality data be collected, as determined in consultation with the RWQCB. EAEC LLC intends to initiate the consultation and begin collecting this background information (if required) in late 2002 or 2003.

Land and Water Use: Local land and water use are described in detail in Section 8.4 and 8.14 of the AFC.

Well Locations, Owners and Information. There are no wells within the facility boundary. Figure 8.14-2A (attached), showing the location of all known wells in the project vicinity(according to DWR records) is attached to this response. The current well owners have not been identified. The water quality information for the well nearest to the project site is provided in Table 8.14-1.

Preliminary Closure Plan: EAEC LLC has not prepared a closure plan. However, the CEC will require a closure plan for the facility at large, and EAEC LLC would intend to include this closure plan as part of that filing.

As noted above, the AFC contains substantially all the information necessary to file an ROWD with the RWQCB. Upon consultation with the RWQCB staff, they have advised us that they would like to determine the necessary requirements of the ROWD after reviewing effluent data for the project, and then would determine whether the waste material is considered designated waste, and what type of permitting and containment design are appropriate. The RWQCB also would like to advise us on the need for and type of background data required. Finally, although EAEC LLC has not prepared final design and construction of the evaporation ponds, the existing soil, geological and seismic information

indicate there are no impediments to constructing to the required stability standards. EAEC LLC has initiated the geotechnical studies and expects to have data confirming these findings in approximately 60 days.

**Data Adequacy Deficiency –W-2.** Please provide information on any CVRWQCB design criteria for the drainage facilities and detention basin that will be required under the NPDES permit and a discussion of the project's compliance.

**Data Adequacy Response –W-2.**

At this time the CVRWQCB has not adopted numerical sizing design criteria for drainage facilities and detention basins for the NPDES permit. Leo Sarmiento of the CVRWQCB confirmed on April 30, 2001, that they have not yet adopted specific sizing criteria, although they plan to do so in the near future. EAEC's drainage facilities and the detention basin are presently designed to ensure that the peak discharge from the detention pond, up to a 100-year, 24-hour storm, will be regulated to less than the pre-construction flow rate. Figure 8.14-4 has been revised to show the detailed location of cutoff valves and an oil-water separator in the system. If the CVRWQCB requires a different design criteria, the project will comply with the CVRWQCB's requirements.

**Data Adequacy Deficiency – W-3.** Please provide hydrostratigraphic (map) information at an appropriate scale that clearly identifies the aquifers in the area of the project (shallow and deeper). Include in this information an identification of relative location of the needed on site well and any neighboring wells.

In addition, Table 8.14-1 suggests that BBID uses groundwater sources to serve its customers. Please provide available aquifer data for the groundwater bodies that may be used by the BBID to serve the project (i.e., physical and chemical characteristics).

**Data Adequacy Response – W-3.** After considering several options, EAEC LLC has determined that it will not use an onsite groundwater well for potable water. As a result all references to the groundwater well in the AFC should be disregarded. BBID does not use groundwater to serve any of its customers. Because the facility would not use groundwater for any purpose, EAEC LLC believes that there would be no significant impacts to groundwater and that this information is no longer needed for the analysis Nonetheless, EAEC LLC is providing additional hydrogeological information.

Figures 8.14-2A and 8.14-2B (attached) provide additional hydrogeologic information for the Mountain House Fan area in the vicinity of the project. Figure 8.14-2A also shows the locations of piezometers and private wells for which well logs are available at the California Department of Water Resources (DWR). These logs indicate that the wells are screened at depths ranging from 30 to 190 feet below grade, and so are most likely screened within the Mountain House Fan deposits or the interfan deposits located between the Mountain House and Kellogg Creek Fan deposits. The well logs also indicate that the sediments encountered at the locations where the wells were drilled consist of interbedded sand and clay. Also shown on Figure 8.14-2A are the locations of the surface water sample and the well from which the groundwater sample was collected for the quality analyses shown in AFC Table 8.14-1.

Cross-section B-B (Figure 8.14-2B) shows an approximation of the hydrostratigraphy expected at the EAEC site. It is probable that the thickness of the alluvial fan deposits at the site will be thinner than those shown in the cross-section because it is drawn through the apex of the fan and the site is located on the margin of the Mountain House Fan deposits. The sediments at the site are probably finer grained than those encountered in the main part of the fan, also because the site is located at the margin of the fan. Thinner and finer grained sediments are generally low producers of groundwater.

The groundwater quality data shown in Table 8.14-1 are probably representative of those encountered at the EAEC site because the well from which the sample was collected is in a similar hydrogeologic situation. Both the well and the site are located on the distal edges of the fan and are located at similar distance from nearby freshwater surface water bodies.

Indications of extremely poor water quality and marginal potential for sustained groundwater yields have resulted in the decision to seek other sources for domestic and process water.

**Data Adequacy Deficiency – W-4.** Figure 2.1-1 shows proposed linear facilities possibly crossing several creeks, canals and/or drainages. Please provide information on these crossings and describe the affected creeks, canals and or drainage's (i.e., chemical and physical characteristics). Please also identify the locations of the wetlands to be impacted on a map of sufficient scale.

**Data Adequacy Response –W-4**. Figure 8.14-1 shows the canals, streams, swales and drainages that occur and would be crossed by the various project linears. Most of these waterways are ephemeral and are dry from 4 to 7 months of the year (canals are generally dry from November to February). A formal wetland delineation pursuant to the ACOE wetland delineation manual has not been prepared for the potential linear alignments, but will be implemented before construction to ensure compliance with Section 404 of the CWA, as indicated in the AFC. As indicated by the question, the waterways can be divided into 3 "types:" canals, streams and swales. Most of the features crossed by linear facilities are irrigation canals operated by BBID to distribute water from the California Aqueduct. They are trapezoidal, unlined, packed earth channels generally excavated in upland soils and with no vegetation. These would not generally qualify as jurisdictional wetlands and would not require Section 404 permits. The water in these canals is surface water from the California Aqueduct and has the same chemical characteristics as described for BBID supply water in Table 8.14-1. EAEC LLC proposes to cross these canals by open trench construction during a dry period, restoring the natural contour and compacting the surface as required by BBID. This method would avoid causing any adverse impacts to aquatic animals and would not remove any vegetation (largely because there is little to no vegetation in the canals). The water in these canals is used for agricultural irrigation, so any slight increase in sediment resulting from construction would not affect the beneficial use downstream. Project linear crossings of canals would occur along the proposed waterline 0.5 mile east of Bruns Road, and 0.1 mile east of the Delta Mendota Canal. The proposed gas pipeline (2B) would cross under Canal 45/70 at or adjacent to Kelso Road. The water quality of this canal is the same as that described in Table 8.14-1. The hydrology (e.g. dry 7 months of the year) is the same. The same construction methods would be used to avoid adverse impacts to water quality and downstream uses.

The proposed water line would cross under the Delta Mendota Canal. The Delta Mendota Canal is a very large, concrete-lined, trapezoidal canal that delivers agricultural supply to the Central Valley. The canal would be crossed underground in a manner that would not intercept the water of the canal. Methods being considered are "jack and bore" or horizontal directional drilling (HDD). These methods would effectively avoid any adverse effects to water quality.

Waterways that could be described as "streams" include Mountain House Creek, which crosses Byron Bethany Road approximately 1.0 miles east of Kelso Road, and Dry Creek that crosses Byron Bethany Road approximately 0.5 miles west of Kelso Road, and an unnamed drainage that crosses the proposed waterline approximately 0.4 mile east of Bruns Road. These natural drainages are narrow, and seasonally dry. Mountain House Creek at the Byron Bethany Road crossing is choked with upland weeds and shrubs. Upstream of Byron Bethany Road, Mountain House Creek is a shallow swale that has been disked and farmed. These observations imply that surface flow in Mountain House Creek probably reaches Byron Bethany Road only during high-flow winter storm events. Normally Mountain House Creek percolates into agricultural lands south of Byron Bethany Road. During high flow events Mountain House Creek may drain into canals that eventually discharge into pump stations that discharge to the Delta as shown on the USGS quad map (Clifton Court Forebay) and in Figure 8.14-1.

The DWR and BBID were searched for water quality information about Mountain House Creek and Dry Creek in the vicinity of the proposed linear crossing, but no data were found. There is apparently not enough flow to support aquatic animals in these lower reaches of the creek. This portion of Mountain House Creek would be crossed by the recycled water line (3C or 3D). EAEC LLC proposes to cross this portion of the creek using jack-and-bore, HDD or as authorized under ACOE Nationwide Permit for utility crossings of small streams. The conditions of the NWP require that the applicant notify the ACOE of its actions and implement conditional measures to avoid adverse impacts to aquatic biota and water quality. In the cases where a stream is dry during construction, these actions are highly effective.

The proposed recycled water line (3D) crosses Dry Creek at Byron Bethany Road approximately 0.4 mile west of Kelso Road. This drainage originates in a shallow swale in agricultural fields south of Byron Bethany Road and assumes the shape of a drain on the north side. It supports cattails and some other wetland plants, and appears to remain wet for most of the year. During high-flow periods this drainage may discharge to the Delta, but generally appears to disappear into the agricultural fields north of Byron Bethany Road. DWR and BBID had no hydrologic or water quality records for this water. This drainage probably would meet the definition of a jurisdictional wetland. EAEC LLC proposes to cross this wetland using either jack and bore, HDD, or in accordance with the terms of a Nationwide Permit under Section 404.

The proposed waterline (2B) crosses an unamed stream0.5 mile east of Bruns Road. This drainage is a broad swale that passes through a culvert under the road and then fans out to a wide stream. The stream supports cattails and other wetland vegetation and appears to be wet for most of the year, and may support aquatic biota such as frogs. DWR and BBID had no hydrologic or chemical data pertaining to this stream. EAEC LLC proposes to cross this

stream by one of several methods that would avoid impacts to the aquatic resource. North of the road, this drainage is narrow and channelized, and EAEC would cross through it by trenching during a dry period, or jack and bore underneath. Alternatively, EAEC may place the waterline in the road and cross over the culverts that convey the stream from north to south of the road. Implementing either of these methods would avoid any adverse impacts to aquatic resources.

Finally, the project transmission lines would be located near a farm pond located adjacent to and south of Kelso Road, 0.2 miles east of the project property. This farm pond collects drain water from agricultural fields south of the project and discharges into the irrigation canal that borders the east side of the property and discharges into agricultural fields north of the property. The pond may or may not qualify as jurisdictional wetland but will be avoided in any case. Construction activities in this area will be more than 25 feet from the boundaries of this farm pond to avoid any potential effects.

**Data Adequacy Deficiency –W-5(a).** Please provide information on the local water supplier to be used to meet potable / domestic water needs. Include in this information a description of the source, the rationale for its use and a discussion of all other potential sources and an explanation why these sources were not feasible.

**Data Adequacy Response –W-5(a).** The domestic water supply for the EAEC will be provided by BBID. A package treatment plant, consistent with DHS requirements for potable water supplies, will be used to treat BBID water for the EAEC. The package treatment plant unit that will be used is a US Filter Water Boy © pre-engineered package plant with microfiltration and UV disinfection, or equivalent. The source of BBID's water is the California Aqueduct as described in Section 8.14 and has the chemical characteristics presented in Table 8.14-1. Other options considered were a groundwater well on-site, or water supply from the federal facilities located on the West Side of Mountain House Road. According to anecdote and some general water quality data, groundwater in the area is of poor quality and not suitable for drinking water without significant treatment. The federal water supply west of Mountain House road has administrative restrictions to its use that are less efficient than using the water that BBID would already be delivering to the site. No other potential sources were considered.

**Data Adequacy Deficiency –W-5(b).** Please provide information on the source of water for construction related activities.

**Data Adequacy Response –W-5(b).** EAEC LLC will purchase water from BBID to use for construction related activities.

**Data Adequacy Deficiency –W-6.** Please provide all construction-related information for the pump station including site preparation, footprint requirements and any changes to the BBID 45 Canal needed to install the structures. Include in this discussion, all activities associated with the lining of the BBID canal from the California Aqueduct to the pump station and installing the water control structures and all the impacts associated with these activities.

**Data Adequacy Response –W-6.** The installation of the pump station on the 45 Canal to serve BBID raw water to the EAEC includes the following characteristics:

- The pump station will be capable of pumping approximately 7,800 gallons per minute (gpm) on an instantaneous basis (3 or 4 pumps). Construction of power lines would involve the installation of a 3-foot wide trench from the BBID intake pump station to the EAEC pump station with power lines installed in conduit. The equipment required would be a backhoe for trenching, a concrete truck for the installation of concrete encased electrical duct bank, and an electrical supply truck capable of fabricating PVC conduit, and pulling cable through the conduit. Installation of the variable speed pump, if needed, at the BBID pump station, would consist of removing the existing pump, and installing a new one. A boom truck or small crane would be needed depending on the size and weight of the pumps and an electrical supply truck to provide the cabling for hooking up the new pump and motor to the existing electrical service. The pump station would have vehicle access provided from a gravel driveway off Bruns Road. The construction of the driveway would be accomplished with a small bulldozer and a gravel truck. Mechanical equipment (piping, valves, gates) would be installed by pipefitters and laborers using primarily boom trucks.
- The pump station footprint would be approximately 30 feet by 40 feet, with a cyclone fence enclosing the site and locked gate. It would be constructed adjacent to and into the southern embankment of the 45 canal station. A temporary construction laydown area of approximately the same size would be needed just adjacent to the site. Site preparation will include clearing, grubbing, and minor grading of the site. The pump station would consist of a concrete structure as the wet well, with the pumps extending to the bottom of the wet well. The base of the wet well would be approximately at the elevation of the bottom of the 45 canal. The pump station would be able to be isolated from the 45 Canal with valves or gates, which would be installed in the canal when the canal lining is accomplished. The depth of the excavation would be approximately 15 feet, and the equipment required to complete the excavation would be an excavator, dump trucks to haul the excavated material offsite, supply truck to bring in the steel rebar, and concrete trucks to haul the concrete for the pump station structure.
- The pumps, electrical equipment (transformer, if needed, motor control center, and control panels), and other miscellaneous equipment will be installed once the structure is in place. Installation will require a boom truck or small crane, depending upon the size and weight of the equipment, to lift the equipment off the supply truck and install it.
- The canal will be lined with concrete from the existing BBID pump station to the site of the new raw water pump station. This distance is approximately 600 feet. The lining would take place prior to the onset of the irrigation season when the canal is not in use and when that section can be dewatered (in the period between November and March). The equipment needed to accomplish this lining is pumps for dewatering if necessary, a bulldozer capable of grading the canal and placing and spreading the base material, and concrete trucks and a concrete pumper capable of distributing the concrete or shotcrete along the length of the canal. If a specialized

canal lining rig is available for this canal size, that may be useful for finishing the lining. Otherwise, manual finishing may be required.

- A radial arm gate will also be installed on the canal just east, or downstream of the pump station. This gate will ensure that the water level is maintained at a set elevation (or range of elevation) so that the pumps in the new pump station can operate properly, and the downstream users are served on demand from the canal as before. The gate will be installed at about the same time as the canal lining and will require a crane to lift it off the supply truck and into position. Its foundation will be installed as part of the wet well excavation and construction, which will entail excavating the embankment, forming the structure, placing the steel rebar, and pouring and finishing the concrete.
- The construction period is estimated to be approximately 7 months, from approximately November through May. Peak construction workforce on the site would be during concrete pouring and finishing for the canal—approximately 20 onsite at once.

Impacts associated with these activities will be as follows:

- Air Emissions due to diesel equipment exhaust and dust during construction are expected to be negligible given the relatively minor amount of heavy equipment required for construction. Total number of heavy equipment hours will be minimal (approximately 120 hours) for grading and excavating the pump station, the canal and the radial gate structure, and about 40 hours for a crane or boom truck installing heavy equipment.
- Traffic impacts during construction are expected to be negligible except during the canal lining process, when approximately 20 round trip concrete truck trips will be occurring concurrently with the other construction at the EAEC and along the linear routes. . Concrete truck trips will be approximately 200 for the canal lining and 20 for the pump station and the radial gate foundation, for a total of 220 (peak will be about 20 trucks per day). Truck trips for hauling of base rock materials (30 trips) and off haul (30 trips) will be approximately 60 trips total, distributed across about a 2-month period. Installation of mechanical and electrical systems (piping and electrical conduit) equipment will involve very few heavy equipment hours other than a backhoe for trenching (fewer than 80 hours)
- No impacts to water quantity or quality are expected. The construction on the canal is planned for the time of the year when the 45 Canal is empty and not in use by BBID.

  No other construction related impacts are anticipated for the construction of the pump station.

**Data Adequacy Deficiency –W-7.** Please provide a discussion of potential water quality impacts to jurisdictional wetlands for which a permit is identified on p. 8.14-23.

**Data Adequacy Response –W-7.** A formal delineation has not been performed for any of the waterways in the project area. However as noted above in response No. W-4, EAEC LLC would implement measures to avoid any adverse impacts to jurisdictional wetlands.

These measures include trenching canals during the dry season, boring under major waterways such as the Delta Mendota Canal, and implementing the conditions of an ACOE Nationwide Permit where project linears would cross streams.

**Data Adequacy Deficiency –W-8.** Please provide page references in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed.

Please include in this table any laws, regulations or standards that apply to the construction and operation of the proposed onsite potable water supply well.

**Data Adequacy Response – W-8**. The following table presents the page references in the AFC where each law or standard during both construction and operation of the facility is discussed. As the project description no longer includes the use of ground water from an onsite well, a demonstration of compliance with applicable laws is not required.

**TABLE 8.14-9A**
Permits and Locations Where Conformance is Discussed

| Permit | Page Number |
|---|---|
| County Grading Permit | 8.14-12, 18 |
| County Stormwater Requirements | 8.14-12 through16 |
| Construction Activity NPDES Stormwater Permit | 8.14-12 through16 |
| General Industrial NPDES Stormwater Permit | 8.14-12 through16 |
| Industrial Wastewater Discharge Requirements (WDR) Title 27 | 8.14-14, 15,17,22,23. |
| Streambed Alteration Agreement 1601 | 8.2-28,31,33; 8.14-18,22,23 |
| Wetlands Permit 404 (and Water Quality Certification, Section 401) | 8.2-28; 8.14-17,22,23 |

**Data Adequacy Deficiency –W-9.** Please provide information on any agency with jurisdiction to issue permits for onsite potable water supply wells.

**Data Adequacy Response – W-9.** Zone 7 in Alameda County issues a permit to install wells and implements the requirements of other state agencies. EAEC LLC after having reviewed additional data has determined not to install a groundwater well on site and therefore does not expect to solicit a permit from Zone 7.

**Data Adequacy Deficiency – W-10.** An onsite well or connection to a local water supplier is identified as the potable water source. Please provide information on the location of the proposed on-site well and the size and location of the potable water service line. If an on-site well is used, please provide any information related to pre-treatment requirements and processes to develop potable quality water.

**Data Adequacy Response – W-10.** The domestic water supply for the EAEC will be provided by BBID. A package treatment plant, consistent with DHS requirements for potable water supplies, will be used to treat BBID water for the EAEC. The package treatment plant unit that will be used is a US Filter Water Boy © pre-engineered package plant with microfiltration and UV disinfection, or equivalent.

**Data Adequacy Deficiency – W-10(b).** Please specify the cycles of concentration used to calculate the plant water balance figures 2.2-6a to 2.2-6f.

**Data Adequacy Response –W-10(b).** The number of cycles of concentration used is shown on each water balance figure (Figure 2.2-6a through 2.2-6f) under the symbol of the cooling tower. These cycles range from 3.7 to 8.1.

**Data Adequacy Deficiency –W-10(c).** Page 10F-4 of Appendix 10F3, states that sanitary wastes will be discharged to the on site packaged treatment system. Please provide all information (i.e., design, construction and compliance with requirements) for this on-site packaged treatment system. Staff has noted that in Sect 8.14 the application states that the sanitary wastes will be discharged to a septic and leach line system.

**Data Adequacy Response –W-10(c).** The project is planned to use an onsite septic and leachfield system, designed and built to comply with local regulations. The treatment system comprises the septic and leachfield system. Because no onsite package system is proposed, no design and compliance details are provided here.

**Data Adequacy Deficiency –W-11.** Proposed drainage facilities and runoff patterns cannot be distinguished on Figure 8.14-4. Please revise Figure 8.14-4 to show stormwater runoff patterns flows at an appropriate scale.

**Data Adequacy Response –W-11.** EAEC LLC has discussed this item with the CEC staff and determined that a larger, representation of Figure 8.14-4 will show the features of concern. The proposed drainage facilities and runoff patterns are shown on an 11 x 17" printout of Figure 8.14-4, provided with this response.

**Data Adequacy Deficiency – W-12.** Based on comments above, please include in the revised Figure 8.14-4, a clear identification of drainage facilities (drains, catchment basins, channels, and any other proposed facilities).

Please provide information on any CVRWQCB design criteria for the drainage facilities and detention basin that will be required under the NPDES permit and a discussion of the projects compliance.

**Data Adequacy Response – W-12.** EAEC LLC is providing (attached) a larger figure that shows the drainage facilities such as cutoff valves and oil-water separator, and runoff patterns.

**Data Adequacy Deficiency –W-(13).** Metals and trace elements are a concern in the source water when concentrated in cooling towers. Table 8.14-1 suggests that BBID uses both ground and surface water sources to supply its customers, however, the text on page 8.14-2 only references surface sources. In addition, Table 8.14-1 provided insufficient information on source water chemical characteristics. Provide additional analytical data on the water sources, particularly groundwater, for metals and trace elements using an analytical method with analytes and detection limits comparable to U.S. EPA Method 200.8, Inductively Coupled Plasma – Mass Spectrometry. Report all analytes and detection limits. Please provide calculations of the revised estimated concentrations of all constituents of concern in all waste or process water streams, and in the total wastewater discharge to the evaporation ponds (based on a revised Table 8.14-1).

Please provide physical and chemical characteristics for water to be provided for potable / domestic needs.

**Data Adequacy Response –W-13.** The domestic water supply for the EAEC LLC will be provided by BBID. A package treatment plant, consistent with DHS requirements for potable water supplies, will be used to treat BBID water for the project. The package treatment plant unit that will be used is a US Filter Water Boy © pre-engineered package plant with microfiltration and UV disinfection, or equivalent.

EAEC LLC will use BBID surface water as its source for process water, cooling water, and as raw water to be treated for domestic uses. The water quality data presented in Table 8.14-1 covered all the immediate constituents of concern for purposes of the AFC, at detection limits available from BBID and the State Department of Water Resources (DWR). The data in this table will be supplemented / updated in a revised table in order to provide the data at the lower detection limits requested by the Energy Commission. Sampling of BBID source water will occur during the first week of May, with a certified laboratory using detection limits comparable to US EPA Method 200.8, Inductively Coupled Plasma—Mass Spectrometry, with analytical results being submitted to the Energy Commission by May 8th, 2001. Table 8.14-1 will be revised to include these supplemental data (with lower detection limits) requested by the Energy Commission.

BBID does not utilize groundwater to serve its customers. Because groundwater is not proposed to be used in any case, the data will be provided on BBID source water only. All analytes and detection limits will be reported. With the revised Table 8.14-1, the revised estimated concentrations of all constituents of concern in all waste and process water streams, and in the wastewater discharge to the evaporation ponds will be documented, along with the calculations. The levels of constituents shown in Table 8.14-4 for the cooling tower drift are a function of the quality of the makeup water, the "constituent-based" cooling tower cycles of concentration, and chemicals added to the cooling tower. The concentrations of constituents in the drift are calculated by multiplying the concentrations in the makeup water by the "constituent-based" cooling tower cycles of concentration and then making adjustments to reflect the addition of sulfuric acid for pH control and sodium hypochlorite, which is used to control biological growth in the cooling water system. The adjustments for sulfuric acid and sodium hypochlorite impact some of the constituents listed under the anions and cations headings, but not those listed under the metals heading. The "constituent-based" cycles of concentration are as follows:

| | 100% BBID Raw Water | 100% Recycled Water |
|---|---|---|
| Cooling Tower Cycles | 5.73 | 2.99 |

The "flow-based" cycles of concentration indicated in Figures 2.2-6a and 2.2-6b are slightly higher than the "constituent-based" cycles of concentration as a result of the contribution of low TDS water that is recycled from the zero liquid discharge treatment processes and returned to the cooling tower. This flow stream includes boiler blowdown, permeate from the high TDS reverse osmosis system, and excess distillate from the brine concentrator.

The levels of constituents shown in Table 8.14-3 for the brine concentrator brine are a function of the cooling tower blowdown water quality (equal to that calculated for the drift) and the recovery rates for the high TDS reverse osmosis and brine concentrator. The assumed high TDS reverse osmosis and brine concentrator recovery rates are as follows:

| | 100% BBID Raw Water | 100% Recycled Water |
|---|---|---|
| High TDS RO Recovery | 74.0% | 74.0% |
| Brine Concentrator Recovery | 96.0% | 92.4% |

The values listed in Table 8.14-3 are conservatively high in that it was assumed that there would be no reduction in metals concentration as a result of the softening process."

The existing information in Table 8.14-3 reflects the calculations of concentrating source water up to concentrated brine for discharge to the evaporation ponds. The physical and chemical characteristics of the water to be provided for potable / domestic needs will be virtually identical to the raw source water, as presented in Table 8.14-1. Comparing treated water quality with raw water quality on Table 7-3, the treated water would have turbidity values below 0.1 NTU, in conformance with that Primary Drinking water standard and all other drinking water Maximum Concentration Limits (MCL's).

**Data Adequacy Deficiency – W-14.** Please provide information on average and maximum daily and annual water demand and wastewater discharge for construction.

**Data Adequacy Response –W-14.** EAEC LLC expects to use an average of 10,000 gallons per day for construction, primarily for dust control and concrete curing. EAEC LLC would contract with BBID for this amount of water. The peak water demand is estimated to be 100,000 gallons / day when filling tanks and pipes for hydrostatic testing. Annual water demand would be approximately 3,650,000 gallons.

Containerized drinking water and self-contained toilets will be used to provide water for domestic and sanitary uses during construction.

**Data Adequacy Deficiency –W-15.** Please provide a discussion of conformity of the on site well construction and operation with any requirements listed above.

**Data Adequacy Response – W-15.** EAEC LLC, after having reviewed additional data, has determined not to install a groundwater well on site and therefore does not expect to solicit a permit from Zone 7.

**Data Adequacy Deficiency – W-16.** Please provide specified contact information for officials responsible for permits for onsite water supply wells.

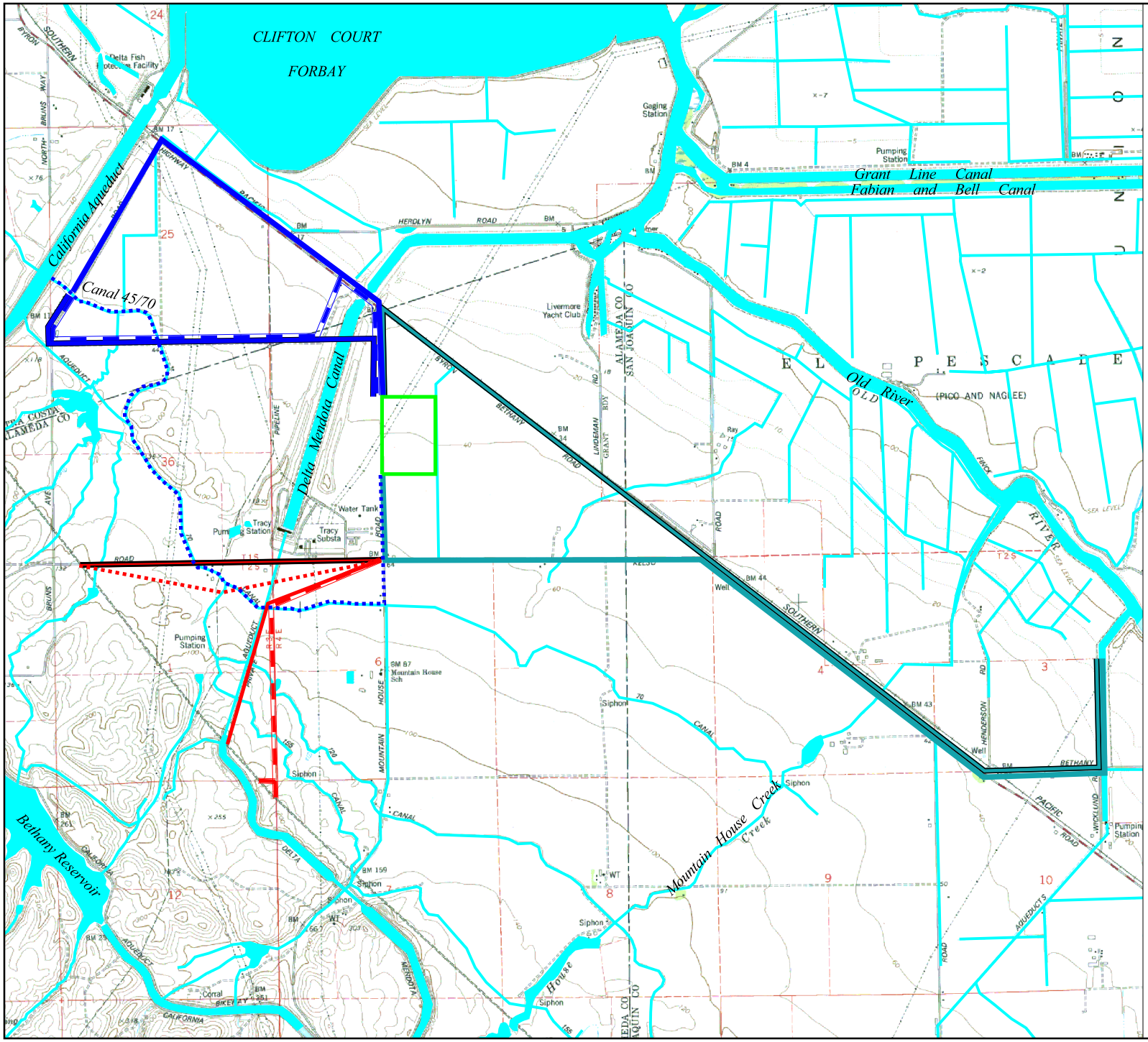
**Data Adequacy Response – W-16.** EAEC LLC after having reviewed additional data has determined not to install a groundwater well on site and therefore does not expect to solicit a permit from Zone 7.

**Data Adequacy Deficiency – W-17.** The AFC specifies a schedule only for the Notice of Intent and SWPPP. Please provide a proposed schedule for all permits identified on p. 8.14-23.

**Data Adequacy Response –W-17.** The following table provides the schedule for permits listed in Table WR-1.

**TABLE WR-1** Water Resource Related Permit Schedule

| Permit | Project Phase | Approximate Date |
|---|---|---|
| CVRWQCB Construction Activity NPDES Permit, General Permit | Prior to Construction | June, 2002 |
| CVRWQCB General Industrial NPDES Stormwater Permit, General Permit | Prior to Operations | March, 2004 |
| Title 27 Waste Discharge Report, CWRWQCB. For discharge of waste to land (evaporation ponds). | Prior to Operations | March, 2004 |
| Streambed Alteration Agreement (Fish and Game Code Section 1601) for modifications to any creek | Prior to Construction | May, 2002 |
| U.S. Army Corps of Engineers Wetlands fill permit pursuant to Section 404 of the Clean Water Act. | Prior to Construction | May, 2002 |
| Water Quality Certification (Clean Water Act Section 401 from CVRWQCB, if 404 permit required. | Prior to Construction | May, 2002 |
| State Department of Health Services Title 22 Engineering Report for permitting recycled water use for cooling water. | Prior to Operations | March, 2004 |
| State Department of Health Services Operating Permit for potable water system. | Prior to Operations | March, 2004 |




Map Location

**LEGEND**

PROJECT SITE

GAS
- 2A PREFERRED
- 2C
- 2D
- 2E

RECLAIMED WATER
- 4A
- 4B PREFERRED

WATER
- 3A
- 3B
- 3D
- 3E PREFERRED

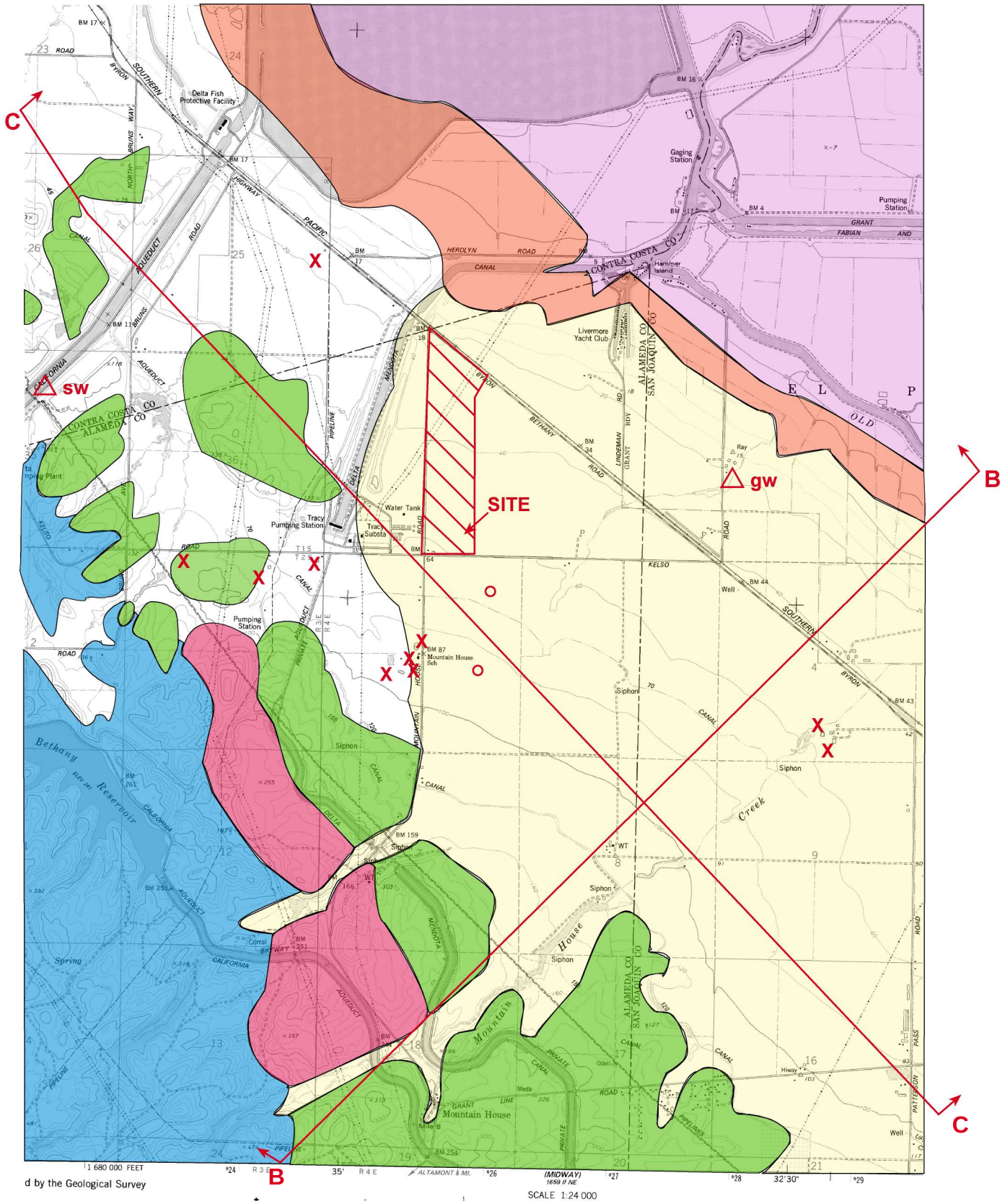
N

1000 0 1000 Feet

SCALE IS APPROXIMATE

**FIGURE 8.14-1**
**LOCAL SURFACE WATER FEATURES**
APPLICATION FOR CERTIFICATION FOR EAST ALTAMONT ENERGY CENTER

CH2MHILL




Location of cross-sections (see Figure 8-14.2a)

X Production well with well log available

Piezometer with log available

Groundwater (gw) and surface water (sw) quality data included in AFC Table 8-14.1

Brushy Creek deposits

Mountain House fan deposits

Basin deposits

Fan toe deposits

Tulare Formation

Neroly Formation

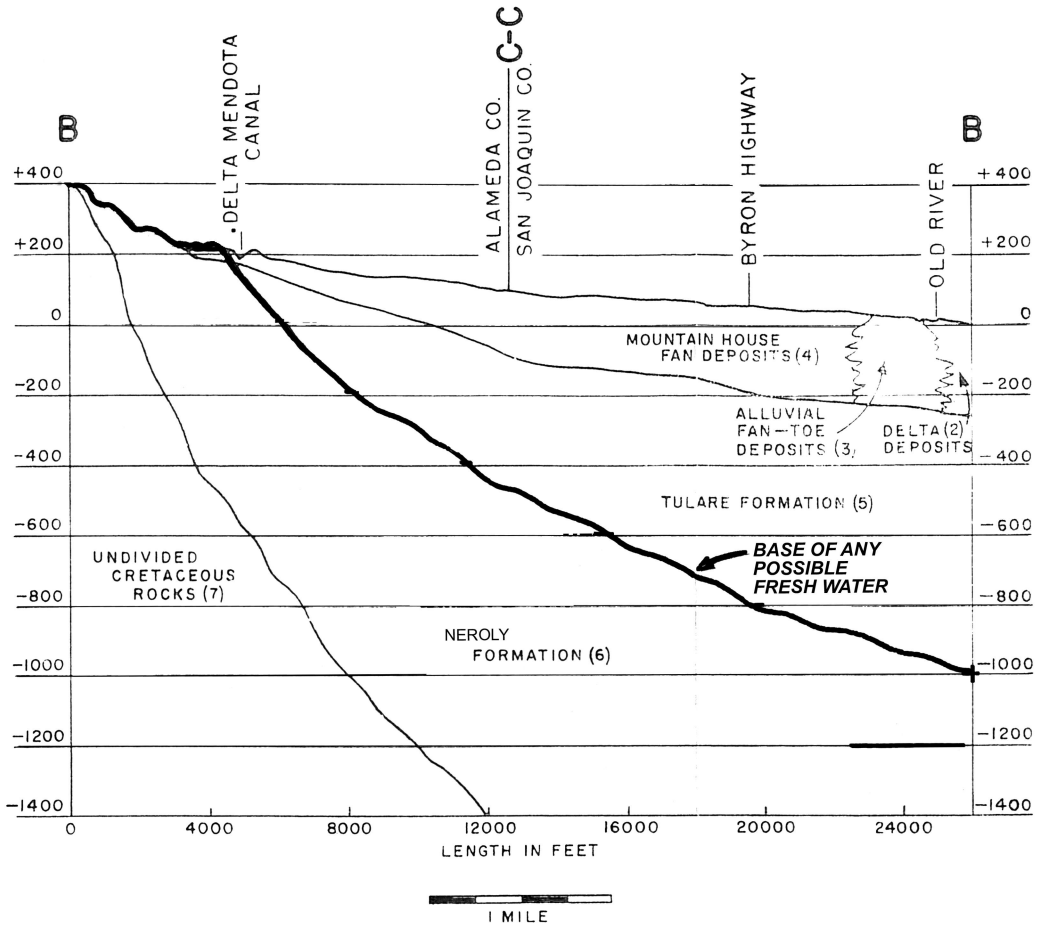
Cretaceous sandstone

After Claire Hill & Associates 1964

**FIGURE 8-14.2a**
**LOCAL HYDROGEOLOGY AND NEARBY WELLS**

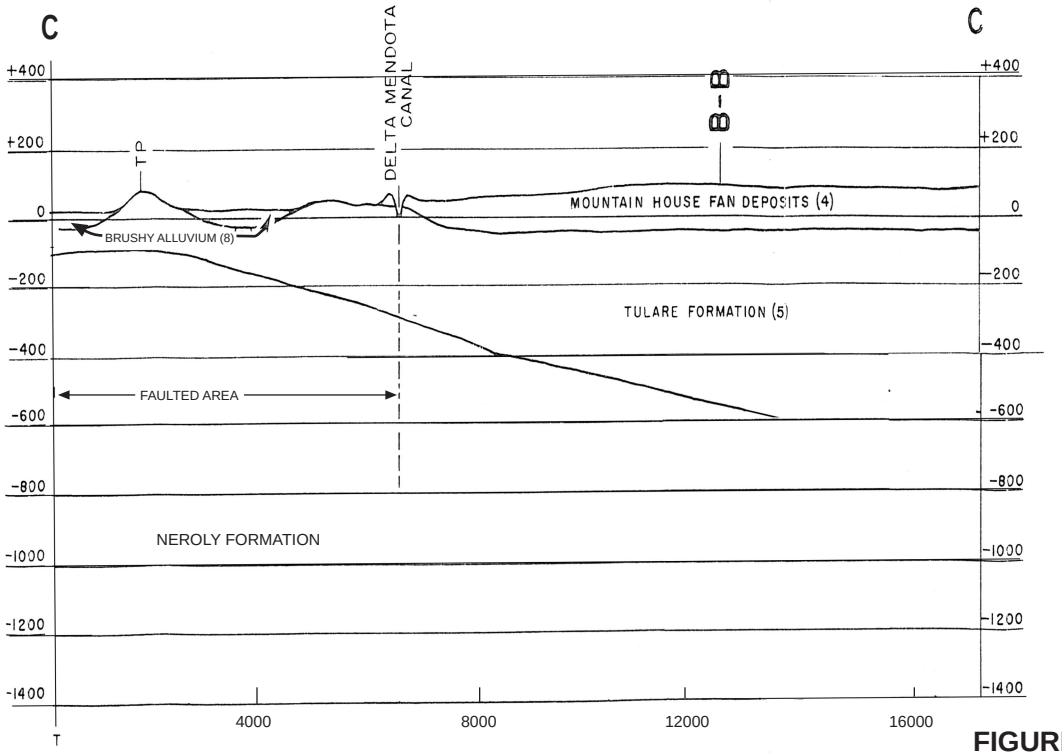
APPLICATION FOR CERTIFICATION
FOR EAST ALTAMONT ENERGY CENTER

CH2MHILL




GROUND WATER NOTES

2. DELTA DEPOSITS CONTAIN FRESH TO BRACKISH WATER.
3. ALLUVIAL FAN—TOE DEPOSITS CONTAIN FRESH TO BRACKISH WATER.
4. MOUNTAIN HOUSE FAN DEPOSITS CONTAIN FRESH TO BRACKISH WATER.
5. TULARE FORMATION CONTAINS BRACKISH AND SOME RELATIVELY FRESH WATER.
6. NEROLY FORMATION CONTAINS BRACKISH TO SALINE WATER
7. UNDIVIDED CRETACEOUS ROCKS CONTAIN SALINE WATER.



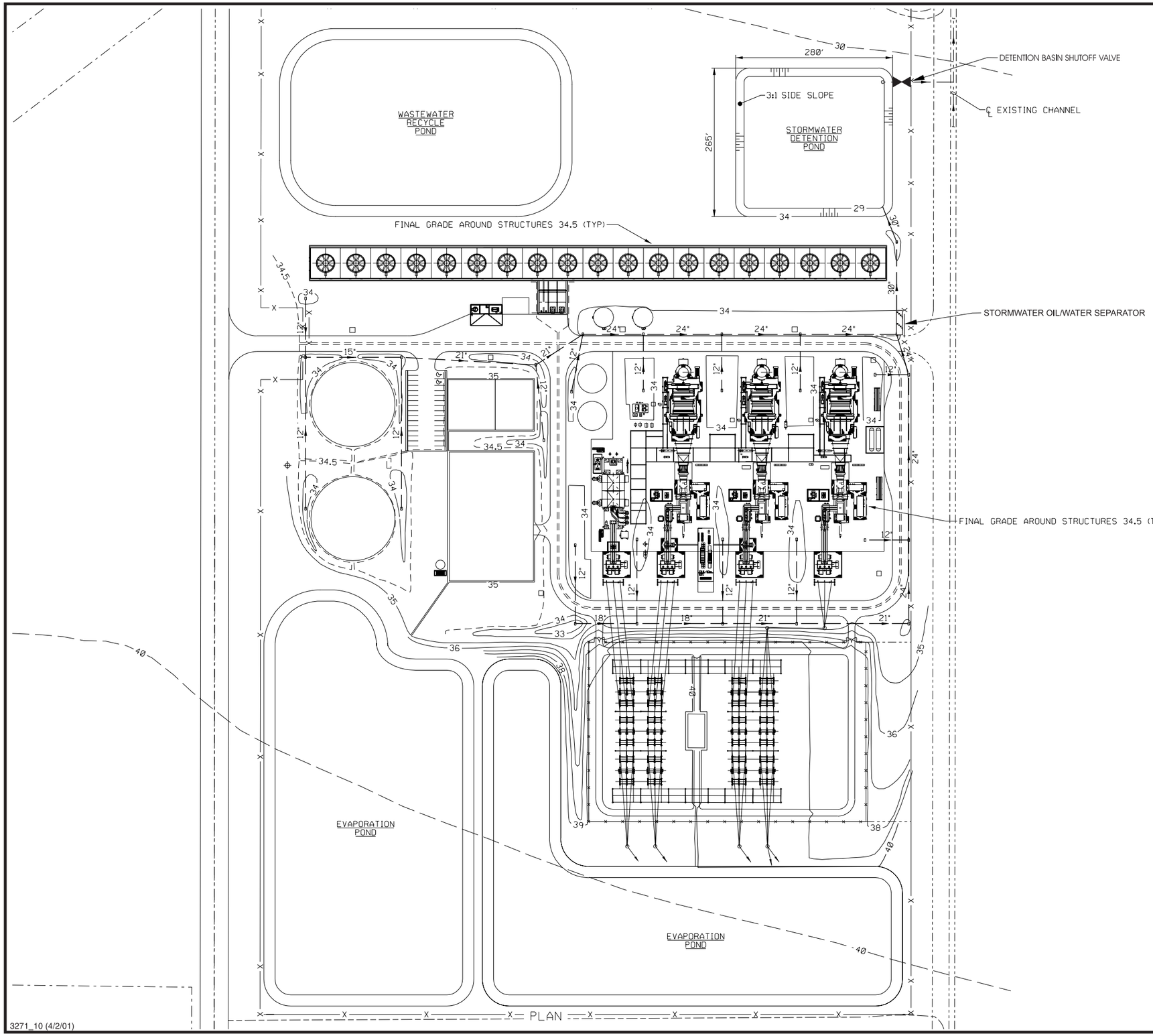

NOTE: SEE FIGURE 8-14.2a FOR LOCATION OF SECTIONS.

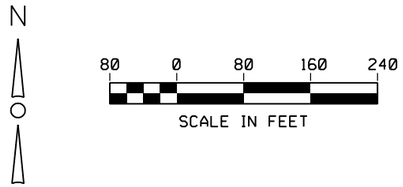
After Claire Hill & Associates 1964

**FIGURE 8-14.2b**
**HYDROGEOLOGIC SECTIONS AND GROUND WATER NOTES**

APPLICATION FOR CERTIFICATION
FOR EAST ALTAMONT ENERGY CENTER

CH2MHILL




## LEGEND

- EXISTING GRADE CONTOUR
- FINAL GRADE CONTOUR
- STORMWATER DRAINAGE PIPE
- INLET

## COVERAGE AREAS (ACRES)

| | |
|---|---|
| TOTAL ACRES | 174 ± |
| PROPOSED DEVELOPED ACRES | 55.00 |
| IMPERVIOUS | 13.35 |
| COOLING TOWER AREA | 1.57 |
| GRAVEL | 14.10 |
| STORMWATER POND | 1.70 |
| WASTE STORAGE POND | 3.98 |
| EVAPORATION POND (WEST) | 5.82 |
| EVAPORATION POND (EAST) | 5.51 |
| LANDSCAPING/GRASS (SITE AREA) | 9.99 |
| RETURN TO AGRICULTURE (LAYDOWN AREA) | 22.00 |
| BALANCE OF SITE (AGRICULTURE/GRASS) | 97.0 |

**FIGURE 8.14-4**
**EAEC PROPOSED DRAINAGE FACILITIES**
APPLICATION FOR CERTIFICATION
FOR EAST ALTAMONT ENERGY CENTER

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3271_10 (4/2/01)

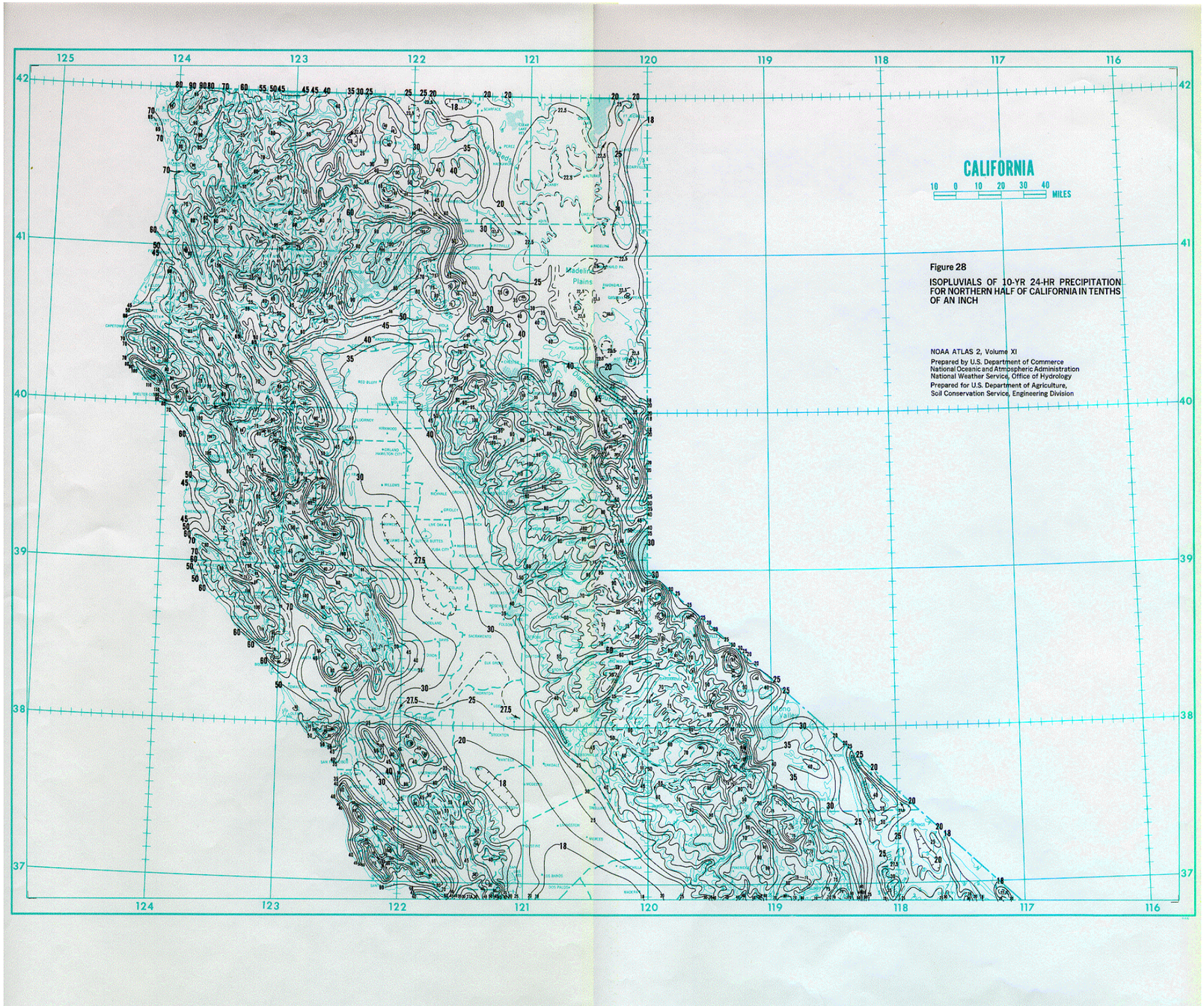


Figure 28

ISOPLUVIALS OF 10-YR 24-HR PRECIPITATION FOR NORTHERN HALF OF CALIFORNIA IN TENTHS OF AN INCH

NOAA ATLAS 2, Volume XI
Prepared by U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service, Office of Hydrology
Prepared for U.S. Department of Agriculture,
Soil Conservation Service, Engineering Division